generations back, contributes (on the supposition of no intermarriage of kinsfolk) less than one part in 16,000,000 to the constitution of a man of the present day."

Mr. Galton thinks that if the father of a family of children collects all the required data concerning his own parents and grandparents, and similarly those concerning the parents and grandparents of his wife, then it is probable in most cases that their children, being informed about all their ancestry up to their eight great-grandparents inclusive, will be equipped with almost as much hereditary information as they can need.

Thus far our ignorance, the author claims, of the conditions by which the level of humanity may be raised, is so great that he believes "if one had some dictator of the Spartan type, who exercised absolute power over marriages, assigning A to be the wife of B, and C to be the wife of D, and who acted with the best intentions, he might possibly do even more harm than good to the race." No man is isolated from his fellows, but is "a prolongation of his ancestry in no metaphorical sense," and the author claims that the compilation of these registers will extend this conviction very widely. In order to obtain statistics bearing on heredity, Mr. Galton offers £500 in prizes to those British subjects resident in Great Britain who shall furnish him with the best extracts from their own family records.

BALBIANI'S LECTURES ON THE SPOROZOA.[1]—The class of Sporozoa was founded by Leuckart in 1879, by whom it was regarded as a new group of Protozoa. Besides the Gregarines it embraced all those parasitic unicellular organisms called Psorosperms. Besides the oviform Psorosperms or Coccidia of Leuckart, in 1881 Bütschli proposed the name of Myxosporidia for the Psorosperms of fishes. In 1882, in his lectures, Professor Balbiani suggested the term Sarcosporidia for the utriculiform Psorosperms, while he places among the Sporozoa a fifth group, which he designates as Microsporidia, comprising the vibrating corpuscles of the silkworm and allied organisms, regarded for a long time as Psorosperms by Leydig and himself.

As thus constituted we have, for the first time, in this useful work a succinct and interesting account of these strange parasites, which are so widespread throughout the tissues of all animals, from the Infusoria to man, and which correspond to the Bacteria among the Protophytes. One of them causes fatal sickness by its rapid and extreme multiplication in the liver of the hare, and has also once occurred in man, producing death. Several of them propagate epidemically, and give rise to more or less fatal epizootics; such are the Sarcosporidia of the sheep and poultry, which

[1] *Cours d'Embryogenie comparée du College de France. Lecons sur les Sporozoaires.* Par G. BALBIANI. Recueilles par le Dr. PELLETAN. Revues par le Professeur. Avec 52 figures intercalées dans le Texte et 5 Planches lithographiées hors texte. Paris, 1884. 8vo, pp. 184.

sometimes decimate the sheep-folds and poultry yards. A great number of fresh-water fishes die owing to the development of Myxosporidia in their tissues, a cause of destruction of these animals in our fish ponds which is still generally ignored. Finally, says the author in the preface, the epidemic invasion of the Microsporidia in silk-raising establishments gave rise to the disease called *pebrine*, which for twenty years has nearly ruined the silk industry throughout the world, and cost France alone more than a millard francs.

Professor Balbiani adds that while MM. Aimé, Schneider and Bütschli have recently enriched the history of the Gregarines and Coccidia, his own contributions relate chiefly to the Myxosporidia and Microsporidia.

After describing the Sarcosporidia, or tubular Sporozoa, he discusses their systematic position, acknowledging the difficulty of correctly classifying them, but following Leuckart in regarding them as animal rather than vegetable. These organisms live as tubular masses of ovoid organisms buried in the muscle of the pig, Otaria, etc., and Balbiani believes that they begin by living on the surface of their host.

The Myxosporidia, or Sporozoa of fish, are treated in an interesting way, with a number of original sketches.

In the chapters on the Psorosperms of articulates (Microsporidia) we have an interesting historical sketch of the discovery of these parasites, which were first detected in 1853, by Leydig in *Coccus hesperidum*, and afterwards in spiders, a bee, a crane-fly and in Daphnia. These he regarded as vegetables, but as belonging with the Psorosperms. Here belongs the organism which causes pebrine, and which Pasteur regards as *organites*, but neither animal or vegetable. This view Balbiani combats with considerable feeling and at considerable length, fortifying his position with sketches, maintaining that they are animal and belong with the Sporozoa.

Report of the Geological and Natural History Survey of Canada for 1880–'81–'82.—We have but just received this report, which bears date of 1883. With it comes a catalogue of Canadian plants, Part I, Polypetalæ, by John Macoun, forming a volume of 192 pages, and containing interesting notes on the occurrence and distribution of the species. We should have expected to find more detailed notes on the Labrador species than we do.

The geological report itself being for a period extending through three years, cannot here well be analyzed. Dr. G. M. Dawson makes a preliminary report on the geology of the Bow and Belly River region, Northwest Terr., with special reference to the coal deposits; Dr. R. Bell reports on the geology of the basin of Moose river and adjacent country, and on the geology of the Lake of the Woods and region adjoining. The most elaborate